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## Psychosocial Factors in Patients with Thyroid Disease

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### 1. Introduction

In the contemporary, or in endocrinological literature, there is still increasing interest in psychological or psychosocial aspects of thyreopathy (thyroid disease). Unfortunately, this theme is rather marginalized in the Czech Republic therefore we have begun to be interested in this topic (Janečková, 2007a, 2008a; Mandincová 2008a, 2008b, 2009a, 2009b, 2011a, 2011b).

We have delivered an overview of the research findings in journal Czechoslovak Psychology (Janečková, 2007b) and at conferences (Janečková, 2007c, 2008c). It is possible to trace down four main lines of the research abroad (see chap. 1.1 – 1.4).

#### 1.1 Researches concerning stress

One part of the research aimed at the role of stress in pathogenesis of thyreopathies, within their process and prognosis, some of them also included research of modifying stress factors, but their importance has not been fully appreciated.

Although a lot of studies stated connection between stress and autoimmune disease, most of evidence is indirect and a mechanism, which the autoimmune disease is influenced by, is not fully recognised. Just the relation between Graves' disease origination and higher levels of stress is considered to be the best indirect proof of the thyroid autoimmune disease, though it is still the subject of discussions. Most of contemporary studies support hypothesis that stress effects origination and clinical course of Graves' disease. Stress influences immune system directly or indirectly through nervous and endocrine system. These immune modulators can lead to a development of autoimmune illness in genetically predisposed individuals (Mizokami et al. 2004; comp. Schreiber, 1985). Depression can be applied as an intervening variable between life stress and an outbreak of autoimmune disease, because evidence it modifies immune response is available (Harris, Creed, Brugha, 1992).

Anciently it was observed that hyperthyroidism was preceded by presence of life stresses. Even the latest study confirms the effect of stress on Graves' disease development. Patients with Graves' disease were researched exclusively. An exception is a research comprising also patients with non-autoimmune hyperthyroidism (Matos-Santos et al., 2001), which results can show the fact that stress contributes to origination of non-autoimmune hyperthyroidism, but less than with autoimmune Graves' disease. Recent

studies looked into life events and observed more negative life events in patients with Graves' disease compared to a control group (Kung, 1995; Lee et al., 2003; Matos-Santos et al., 2001; Radosavljević et al., 1996; Sonino, et al., 1993; Winsa et al., 1991; Yoshiuchi et al., 1998a, 1998b). Some earlier studies rejected the relation between stressful events and hyperthyroidism origination. However, they had considerable methodological problems to which can be attributed the fact that a consistent coherence was not found. Most probably, a difference in Martin-du Pan's research was not proved due to the same reasons (1998, as cited in Mizokami et al., 2004), because he arguably created a control group. Some studies (Kung, 1995; Winsa et al., 1991; Yoshiuchi et al., 1998b) integrated modifying factors into the research – evaluation of coping and social support. Furthermore, Kung (1995) and Yoshiuchi et al. (1998b) realized that life events occur rarely and they cannot reflect total stress that an individual experiences and the source of distress can also be hassles or daily stresses and minor events.

Much less prospective studies dealing with the effect of stress on hyperthyroidism course were carried out, yet they denote that more important life events and daily hassles can be of a negative effect on Graves' disease course (Ferguson-Rayport, 1956, as cited in Whybrow, 1991; Fukao et al., 2003; Hobbs, 1992; Yoshiuchi et al., 1998a). Already Schreiber (1985) speaks about the fact as a psychological stress, difficult task from an environment and individual's reaction to it can exacerbate calmed hyperthyroidism, and even hypothyroidism.

It is difficult to evaluate stress influence on origination and course of another autoimmune disease – Hashimoto's thyroidism, because it is quite often developed inconspicuously, the stress influence could have been overlooked (Mizokami et al., 2004).

## 1.2 Researches concerning personality

Another group of surveys researched a personality of a sick. The research into a personality was very popular with researchers (Ham, Alexander and others), especially in 50s and 60s of 20th century, when specific personality traits predisposing to hyperthyroidism were sought. Later studies proved neither typical personality, nor found a specific conflict in childhood (in Whybrow, 1991; Rodewig, 1993; Kaplan, Sadock, Grebb, 1994). Robbins and Vinson (1960) also regard the result of their study as an evidence of the fact that the personality role was overestimated in hyperthyroidism. At present, these issues are getting into the background compared to other research topics.

Influence of the thyroid disease on a personality and relation between personality traits and thyreopathy is realised in a quite difficult way. It is difficult to make a decision what the cause and consequence is. Harineková (1976) describes specific personality characteristics in girls with eufunctional goitre. Similarly, Ma, Luo and Zeng (2002) found some personality characteristics in adult patients different from the control group. Jenšovský et al. (2000, 2002) did not prove changes of personality traits in individuals with subclinical hypothyroidism during T4 treatment in the Czech study. Caparevic et al. (2005) examined patients with nodular goitre with whom the occurrence of mental disorders was reduced after an operation. Yang and Zang (2001) indicate that the choice of coping strategy is influenced by the personality in the patients with Graves' disease. Fukao et al. (2003) carried out a prospective research in Japan and they realised that some personality traits worsen the prognosis of treated Graves' disease.

### 1.3 Psychological means usage with treatment of thyroid disease

Newly, works calling for usage of psychological means in the treatment of thyreopathies occasionally appear. Available resources discuss these issues, especially with hyperthyroidism treatment. Monographs provide only general recommendations concerning suitability of psychotherapy (e.g. Baštecký et al., 1993; Kaplan et al., 1994; Markalous & Gregorová, 2007). A few works confirm successful treatment of patients with hyperthyroidism with a combination of conventional medicine and psychological means (Fukao et al., 2000, as cited in Fukao et al., 2003; Zeng et al., 2003; comp. Brown et al., 2010).

In a British study Lincoln et al. (2000) realised that patients with hyperthyroidism do not have enough knowledge concerning this disease. Likewise, treated patients with hypothyroidism were not satisfied with insufficient or misleading information that was provided by the doctors on the disease and its treatment (Mc Millan et al., 2004). Air et al. (2006, 2007) state that it is not possible to rely on the Internet as a tool of patients' education, because the information concerning thyroid carcinoma on the web sites was quite often incomplete and outdated. Roberts et al. (2008) surveyed which information would be necessary for the patients with the carcinoma. Sawka et al. (2011) have developed a computerized educational tool (called a decision aid) to inform patients about available treatment options and have been utilized in oncologic decision-making. Huang et al. (2004) rightfully assume that a big potential is hidden in nurses' care (comp. Filická & Hadačová, 2006; Olosová & Filická, 2006).

We are informed on a range of organisations that help patients in thyroid disease or they associate them, and on a big amount of information materials for these patients (more detailed Janečková, 2008b; Mandincová, 2010). On the other hand, a lot of Czech patients have very little quality information and educational materials on the disease and its consequences, diagnostics and treatment. More or less, there is only one web site created by a female patient after a thyroid operation (available at [www.stitnazlaza.estranky.cz](http://www.stitnazlaza.estranky.cz) dated 04/09/2011). As well as, special organisations supporting or associating patients, self-supporting groups are still missing. Practically, the situation in the Czech Republic has not change within the last two years.

We suppose if the mental disorder was not diagnosed in the patient with thyreopathy, the role of psychological and psychosocial means and psychotherapy itself has not been fully appreciated in their treatment (comp. Sinclair, 2006). Austrian researchers (König et al., 2007), among others, point out the importance of psychological and psychosocial methods introduction into the healthcare system with these patients. Ponto and Kahaly (2010) recommend psychosomatic treatment also in the ills with orbitopathy, as well as Hirsch et al. (2009) and Lee et al. (2010) in patients with carcinoma.

### 1.4 Researches concerning quality of life and perception of health status

The recent studies especially deal with examining health status and/or quality of life that often include examining of mental condition and cognitive functioning.

Measuring quality of life has become a key part in the evaluation of the disease impact and treatment or intervention effect (Razvi, McMillan, Weaver, 2005). Residual symptoms can often persist with the patient even after adequate treatment. Psychiatric symptoms usually

subside with a suitable treatment nevertheless long-lasting disorders can contain a degree of disease process irreversibility and provoke highly individual affective response according to psychological losses and gains of individual patients. The quality of life can be seriously endangered even in case that the patient should be well (at least from the hormonal viewpoint). Therefore the contradiction in health perception among the patients, their partners and doctors is often emphasized in the quality of life research. The emphasis is often placed on laboratory measurements 'hard' data, but 'soft' data gained with reliable methods for quality of life evaluation are underestimated (Sonino, Fava, 1998). To assess seriousness of the disease and response to treatment it is necessary, except for biochemical test, to observe the symptoms, health status and quality of life with the help of suitable methods. The relation between physiological and clinical evaluation and consequences that are given by the patient is in fact moderate and rather changeable (Razvi, McMillan, Weaver, 2005). The results of many studies dealing with the health status measurement, alternatively quality of life, often signal their independence on the thyroid functioning (Biondi et al., 2000; Elberling et al., 2004; Wekking et al., 2005). Also König et al. (2007) realised that the evaluation of subjective and objective health status in the ill with thyroid have considerably differed, before the treatment and even after it.

The patients with non-treated thyreopathy independently of the type of disease suffer from a whole range of symptoms and their health status, alternatively quality of life, is considerably disrupted in most aspects. Moreover, it shows that this disruption persists in many patients for a long time, even if they are treated. Substantial part of patients with thyreopathy experience limitations in their common activities, they feel worsen health status and disruption of social and emotional areas. Cognitive ailments and tiredness are also frequent. Cosmetic problems are also usual. Long-term consequences of the treated by thyreopathies are very frequent. Approximately 1/2 of patients have stated total deterioration of the health status, alternatively quality of life, limitation in usual activities, as well as social and emotional problems. Two thirds feel tiredness and approximately one third is anxious, they have cognitive and sexual problems. Moreover, the patients with earlier hyperthyroidism very often suffer from classic symptoms of hypothyroidism and, vice versa, symptoms of hyperthyroidism persist approximately in one third. Patients with eufunctional goitre have been examined the least, there does not exist a study which would indicate that such patients suffer from cognitive ailments (Watt et al., 2006).

But insufficient defining the sample of patients (i.e. type of thyreopathy) and confusion or incorrect usage of basic notions is quite typical for current studies dealing with patients in thyreopathy. Only a few studies research patients' quality of life in the true sense of the word (Abraham-Nordling, 2005; Dow, Ferrell, Anello, 1997; Huang et al., 2004; McMillan et al., 2004, 2005; Terwee 1998, 1999, 2002). A lot of works confuse the evaluation of the quality of life for the measurement of symptoms non/presence, health status, psychical status, eventually mental well-being are often incorrectly described as the quality of life. People, whose health is bad, do not have to necessarily feel worsen quality of life. Incorrect understanding of the notions leads to the fact that the results of these studies can be incorrect or misleading, because a method for evaluation of one variable is used for measurement of something else. Moreover, available specific tools lack convincing data on validity, the exceptions are GO-QOL, ThyDQoL and ThyTSQ, which are of good psychometric characteristics. A disadvantage of the tools is that they only focus on a specific



type of thyroid disease therefore they are not applicable across different thyreopathies. For a long time there has not been created a questionnaire that would cover all the relevant aspects of thyreopathies in longitudinal studies, when there can happen changes of hormonal status based on the character of the disease or treatment. (Razvi, Mc Millan, Weaver, 2005; Watt et al., 2006). According to available data we were the first who tried to create such method (Janečková 2001, 2006). Currently ThyPRO is being developed with promising psychometric characteristics focused on patients with any benign thyroid disorders (Watt et al., 2009).

#### 1.4.1 Researches in hypothyroidism

There are studies which prove that despite the treatment of hypothyroidism with hormone T4 substitution, a lot of patients quote more or less vague complaints and feel worsened quality of life (Mc Millan et al., 2004, 2005, 2008; Saravanan et al., 2002; Wekking et al., 2005).

Researches of alternative therapy – treatment with hormone T4 and T3 combined substitution have been carried out. Based on Grozinsky-Glasberg et al.'s (2006) meta-analysis and Ma et al.'s (2009) systematic review it can be summed up that combined T4 and T3 treatment does not improve well-being, cognitive function, or health status compared with T4 itself. This is proved with works by Appelhof et al., 2005; Clyde et al., 2003; Joffe et al., 2004; Meng et al., 2004; Nygaard et al., 2009; Regalbuto et al., 2007; Saravanan et al., 2005; Sawka et al., 2003; Siegmund et al., 2004; Valizadeh et al., 2009; Walsh et al., 2003 and others. Whereas first works signalled differences in favour of combined T4 and T3 (Bunevičius et al., 1999, 2002; Bunevičius & Prange, 2000).

Hormonal therapy is considered as a very successful for reduction of morbidity and mortality. On the other hand, there are also real deficiencies that we have to be aware of – it is always dealt with imitation of normal hormone secretion. Additionally, it is difficult to quantify the effect of hormones on the level of tissues. Being aware of hormonal therapy deficiencies we can avoid incorrect marking of patients' complaints. In fact, it is probable that deficiencies of biological therapy partially participate in the complaints. On the contrary, it is important to strive for this treatment further improvement, because we contribute to creation a "chronic endocrine patient" (Kaplan, Sarne, Schneider, 2003; Lamberts, Romijn, Wiersinga, 2003; Romijn, Smit, Lamberts, 2003). There are several proofs that patients do not follow sufficient treatment that can be indicative of their dissatisfaction with the treatment (McMillan et al., 2004). There are a lot of organisations abroad associating patients with thyroid disease, especially those dissatisfied patients create a big stress on professional public, they have reservations about the diagnostics and therapy (they criticise laboratory testing as a diagnostic criteria, or they prefer dried pork thyroid to synthetic hormone substitution).

#### 1.4.2 Researches in hyperthyroidism

A study realising that in patients with Graves' disease persists worsen health status in some aspects even after reaching the euthyrosis has been carried out (Elberling et al., 2004). Abraham-Nordling et al. (2005) have concluded similar results, but they have not found dependence of the health status on the way of therapy (surgical, drug, radioiodine). According to Watt et al. (2005) specialists and patients' opinions on the most important

aspects of the quality of life with Graves' disease are significantly different. According to the patients, it is higher tiredness, perception of heart beating and internal restlessness, according to the endocrinologists it is dealt with hand shake, increased perspiration and weight loss.

Persistence of worsened health status even after the hyperthyroidism treatment has been proved by Fahrenfort, Wilterdink and Van-der-Veen (2000). Paschke et al.'s (1990, as cited in Rodewig, 1993) study indicates that higher anxiety appears in patients with hyperthyroidism in euthyroid status.

Studies of the quality of life are also focused on the patients with orbitopathy connected with Graves' disease. Orbitopathy (even in a moderate form) significantly influences patients' quality of life (Egle et al., 1999; Kahaly et al., 2002, 2005), and this negative influence is not in accordance with usual clinical evaluation (Gerding et al., 1997) and it often persists even many years after the treatment (Terwee et al., 2002). Other surveys have been devoted to the development of specific GO-QOL method that measures psychosocial consequences of a changed look and the consequences of diplopia (double vision) and worsen sharpness in common sight functioning (Terwee et al., 1998, 1999, 2001; Wiersinga et al., 2004). An interesting qualitative study in patients with orbitopathy has been carried out (Estcourt et al., 2008).

#### 1.4.3 Researches in thyroid carcinoma

Evaluation of the quality of life and health status is especially important in the patients with thyroid carcinoma because they can experience changes of hormone statuses within the treatment – from long-term use of supra-physiological doses of T4 hormone (subclinical hyperthyroidism) to short-term time-limited period of T4 discontinuation (hypothyroidism) that is required by the preparation for diagnostics or radioiodine therapy.

Available studies are identical that there is a significant deterioration of patient's health status with short T4 discontinuation (Botella-Carretero et al., 2003; Pacini et al., 2006; Schroeder et al., 2006; Tagay et al., 2005). Due to the fact that T4 discontinuation is of a significant effect on patient's health status, other methods or preparation for diagnostics or radioiodine therapy have been sought. Usage of rhTSH (recombinant human thyrotropin hormone) is considered as a suitable method instead of the previous one what leads to improvement of patient's compliance and maintenance of patient's common daily routine and productivity (Duntas, Biondi, 2007).

Concerning the patients undergoing long-term usage of supra-physiological doses of T4, the research findings with mentioned above methods application are inconsistent – the results of some studies signal deterioration of the health status, even if less significant than in patients after T4 discontinuation (Botella-Carretero et al., 2003, Tagay et al., 2005), other studies have not found disturbed health status (Eustatia-Rutten et al., 2006; Schroeder et al., 2006).

The first studies in general methods of quality of life have been carried out in China. Hou et al. (2001) have found out that the quality of life in patients with non-papillary carcinoma was worse in some aspects in comparison with other patients. Huang et al. (2004) have carried out measurement of patients' quality of life after removing the carcinoma surgically when the level of the result score was analogous to other chronically ill.

Recently, the research has especially focused on follow up of patients with differentiated thyroid cancer. Impaired health status and quality of life have been surveyed in them (Hoftijzer et al., 2008; Lee et al., 2010). Quality-of-life and health status parameters were inversely affected by duration of cure and consequently may be restored after prolonged follow-up (Giusti et al., 2011; Gómez et al., 2010; Hoftijzer et al., 2008; Malterling et al., 2010; Pelttari et al., 2009). Special attention should be paid in patients with more severe staging on diagnosis (Almeida et al., 2009; Giusti et al., 2011). An interesting qualitative study has been carried out in this topic (Sawka et al., 2009).

#### **1.4.4 Researches in subclinical hypothyroidism and hyperthyroidism**

In connection with laboratory diagnostics improvement the research of subclinical thyroid disorder moves forward. Some patients may suffer from clinical symptoms resembling hypothyroidism or hyperthyroidism, and others do not. There is not a consensus concerning the fact whether these diseases should be treated (Stárka, Zamrazil et al., 2005), therefore the research in health status and some aspects of quality of life are becoming more important.

A lot of studies observing patients with non-treated subclinical hypothyroidism proved deterioration in some aspects of the health status (Appolinario et al., 2005; Baldini et al., 1997, 2009; Monzani et al., 1993; Razvi et al., 2005). However, the results of works observing if the therapy with T4 hormone is beneficial are disputable. Some studies mention specific effects (Baldini et al., 1997, 2009; Bono et al., 2004; Jenšovský et al., 2000, 2002; Monzani et al., 1993;), other works do not prove positive changes (e.g. Parle et al., 2010). Recent study by Jorde et al. (2006) does not either demonstrate the profit of T4 treatment, but it does not find any differences among patients with subclinical hypothyroidism, concerning the health status, as well as by Vigário et al. (2009), Park et al. (2010).

Compared to the control group, the research results by Biondi et al. (2000) testify for deterioration of some health status aspects with non-treated patients with endogenous subclinical hyperthyroidism.

#### **1.4.5 Researches in euthyroid goitre**

Only little attention was paid to the patients with euthyroid goitre within the research of quality of life and health status. The results of the studies in non-treated and treated patients signal deteriorated health status in some aspects (Bianchi et al., 2004; Janečková, 2001, 2006; König et al., 2007).

It is supposed that just a regular monitoring of patient's euthyroid status with nodules in thyroid reduces the quality of his life; on the other hand, more significant deterioration of the quality of life would occur if the patient was not dispensarized within his course of life (Dietlein & Schicha, 2003; Vidal-Trécan et al., 2002).

## **2. Aims and background**

The aim of our research was to map psychosocial aspects of thyroid disease (thyreopathy). We have especially focused on patients' quality of life, role of stress and coping with it, including protective factors (resilience and social support); at the same time we tried to



compare the results with the healthy population. It dealt with comparing the patients in thyroid disease who have undergone an operation, including their follow up after surgery.

We have looked into this topic from the viewpoint of two relatively young disciplines, namely health psychology and, at the same time, we are inspired by positive psychology. Health psychology represents one of the fastest developing spheres of present psychology; it is a relatively young discipline. Mostly there is a consensus that it is dealt with a discipline that applies psychological knowledge into the sphere of health, diseases and the healthcare system (comp. Kebza, 2005; Krivohlavý, 2009; Mohapl, 1992; Vašina, 1999). Many psychologists are aware of the necessity of a change, but not in a radical diversion from existing negative topics in psychology (basically given by the historic development), but rather in the sense of the whole picture completion with “positive” topics. It is due to the fact that absence of negative aspects is not the same as presence of the positive ones. Dissatisfaction with the existing state, newly oriented constituent psychological research, new attitudes to the representatives of different psychological disciplines have gradually flown into a bigger stream that has taken a shape and determined itself as the positive psychology (Kebza, 2005; Krivohlavý, 2010; Mareš, 2001; Seligman, 2000).

### 3. Design of the research

In correspondence with our research aim we have chosen non-experimental research plan (Hendl, 2006), where its core does not consist in an invasion or in a deliberate manipulation with the observed variables. Sometime such research plans are called as sample surveys. We understand our study as a descriptive research focused on exploration, description and orientation, or confirmation of carried out research, eventually prediction. We have used differentiation overview where we have compared patients in thyreopathy to health population, or patients with different types of thyreopathies among each other. We have presumed to compare health population with the ill in thyreopathy as a whole, because it is known from literature that within the course of this disease there can occur changes of hormonal status based on the disease or treatment character. We have used a development overview (a specific type of a differentiation overview) in the sense of longitudinal follow up of patients after 3 and 6 months since surgery where we try to capture a change of observed variables in time in patients with thyreopathy overall, or in the patients with different types of thyreopathies. We want to avoid frequent, quite easy process of measuring the status only before and after the change, what is rightly criticised (Břicháček, 2006), especially in measuring the quality of life (Mareš, 2005). We have also followed in our orientation research (Janečková, 2001, 2006), where we have especially focused on the thyroid disease as a mental strain (stress) and we have researched the consequences that this disease brings to the patients, its diagnostics and treatment. With respect to the research problem, the choice of a mixed research strategy has been considered as the most suitable one (quantitatively-qualitative).

The patients have almost always been asked by the doctor, who operated them on, to take part in this research. Then, the researcher conducted an interview with the patient. At first, he described him simply the aim and character of the research, then there was the dialogue

itself and in the end, the patients were given questionnaires and instructions to them. The patient was informed to fill in the questionnaire 1 or 2 days before release from hospital (even due to the fact he will probably feel himself well), what was followed, with some exceptions. Being released from hospital, the researched person handed in the filled in questionnaire in a sealed envelope. Data collection after 3 and 6 months has also been realised in the hospital in a group form. The group was always formed by patients who were operated on within  $\pm 14$  days. At first, they filled in the questionnaires, then and individual semi-structured dialogue was carried out with them. The research has been approved by an ethics committee of the involved hospital.

#### 4. Samples

The examined sample was created by the patients with thyroid operation carried out within the period from January 2006 to January 2007. The data were gained from 143 patients, 132 women (92.3 %) and 11 men (7.7 %). Average age of the patients was  $51.9 \pm 14.4$  years. It was dealt with 45 patients with hyperthyroidism, 70 with nodular goitre, 17 with carcinoma (7 papillary carcinoma, 7 papillary microcarcinoma, 3 medullary carcinoma) and 11 with thyroiditis. Concerning the patients in nodular goitre, 36 of them underwent hemithyroidectomy and 34 of them total thyroidectomy. Patient's hormone level was adjusted within the hospitalisation in the way so that he would be euthyroid. Originally, according to thyroid function there were 45 patients hyperfunctional, 89 eufunctional and 9 hypofunctional. 68 patients did not take any specific medication, 39 took thyrostatics and 36 took synthetic thyroid hormones. An average length of thyreopathy from the diagnosis was  $5.6 \pm 8.7$  years. Co-morbidity of diseases in patients with thyreopathy was also followed, when the doctor confirmed with all of them that, from an objective viewpoint, no one of them suffers from more serious disease than it corresponds to common population of the same age. We also inquired if the patient did not experience any important changes in his recent life. Persons from the control group were asked the same, because it could influence for example the results in the questionnaires.

Altogether 91.1% of addressed patients with thyreopathy took part in the research within their hospitalisation. After 3 months since surgery, 131 patients continued in the research and, after 6 months, 125 patients from the original sample (143 people). Altogether 87.4% of patients from the original sample finished the longitudinal follow up. "Wear and tear" of the sample occurred approximately in the same percentage with men and women. In general it can be said that we were successful in reaching quite a high percentage of filled in questionnaires and a small wear and tear of the sample (experimental mortality) during the longitudinal follow up. Probably due to this reason, that nearly all patients were enthusiastic about nice approach to them by the medical staff, especially by the doctor and they felt gratitude for that.

Selection of people into the control sample was given by respondents' availability and their willingness to participate in the research. In a maximum extent, we equalised this file with a group of patients according to criteria, such as sex, age and residence in the same region. We excluded people who were in the past, or who are currently treated with thyreopathy, or who are in medical dispensarization due to the mentioned above disease. Due to the fact that it was quite difficult to gather needed amount of healthy people, at the same time an avalanche selection, or the method of snowball, was applied (Ferjenčik,

2010; Miovský, 2006). Finally, the control sample was formed by 137 healthy people not suffering from thyreopathy, 127 women and 10 men. Average age of the respondents was  $51.5 \pm 14.8$  years. Altogether, the questionnaires were filled in by 86.2 % of responded healthy people.

## 5. Methods

While choosing the method of data collection we endeavoured so that they were relevant to the aim of the research and observed variables based on the studied literature. We chose methods with good psychometric characteristics. All the persons were administrated with 7 tested methods and a semi-structured interview was carried out.

### Antonovsky's Sense of Coherence Scale = SOC

SOC (sense of coherence) questionnaire contains 29 items, the extent of scores is 29 to 230. The method is based on Antonovsky's conception of SOC resilience and was translated by Křivohlavý. Except for the total coherence (integrity) of a personality, it measures 3 dimensions of SOC – comprehensibility (C), manageability (MA) and meaningfulness (ME). Křivohlavý (1990) mentions correlation of SOC, among others with Spielberger's STAI questionnaire.

### Perceived Social Support Scale = PSSS

Perceived social support scale was surveyed by means of PSSS self-assessment method by Blumental et al. (1987). It consists of 12 basic and 4 additional items by means of which a person assesses availability of social support and satisfaction with it. The questionnaire items are assessed on a 7-point scale of Likert's type, where an individual expresses the extent of his agreement or disagreement with the given statement. A total score and 3 constituent scores are inquired – social support from an important, not specified person (PSSS\_A), from family members (PSSS\_B), and from friends (PSSS\_C). Other 4 items (scales) that were added by Vašina (1999) allow to compare social support evaluation from the family, friends, co-workers and superiors.

### COPE inventory

We used COPE questionnaire created by the team of Carver, Scheier and Weintraub (1989), in the Czech Republic translated by Vašina (2002), to find out coping strategies. Through 15 scales the method captures 15 groups, types of coping strategies. Each type is diagnosed with the help of 4 items on a 4-level scale from "I do not react like this" to "I react like this quite often". The authors of the method were thinking about a problem, whether the choice of specific types of reaction depends on a situation or on personal traits (similarly to Spielberger in STAI method), and with the help of a suitably chosen instruction they managed to capture dispositional and situational coping reactions (Vašina, 1999). In our study we have rather focused on general tendency of strategy selection. The questionnaire contains either, reactions that can be regarded as adaptive, effective, or maladaptive, ineffective. Each scale is unipolar, it means its missing does not mean that the present is the opposite. The method contains at least 2 pairs of opposite tendencies when it can be presupposed that a man can use wide repertoire of strategies in specific periods of life, including both opposite tendencies. Carver emphasizes that

neither any total COPE score is counted from the method, nor the scales are divided into problem-focused and emotion-focused coping strategies. He rather pays attention to each scale separately and he observes what relation it is to other variables. He recommends so that each researcher would identify in their data own factors because different samples show different regularities of relations (dated 04/09/2011 available from <http://www.psy.miami.edu/faculty/ccarver/sclCOPEF.html>).

### **Schedule for the Evaluation of Individual Quality of Life = SEIQoL**

SEIQoL is a method detecting individual quality of life, based on a interview. Altogether it requires a period of 10 to 20 minutes and it is suitable for research and clinical purposes (O'Boyle et al., 1994, as cited in Křivohlavý, 2009; O'Boyle et al., 1995). It has been used for different groups of patients even in healthy people (e.g. Buchtová, 2004; Koukola & Ondřejová, 2006; Rybářová et al., 2006; Řehulka & Řehulková, 2003). According to authors' conception, the quality of life of an individual, it depends on his own system of values that is fully respected within this method detection. The individual determines, considers and evaluates aspects of life that are essential for him in the specific situation and time (Křivohlavý, 2002). In the Czech Republic, this method was translated by Křivohlavý (2009). The result is calculation of a table (table – quality of life) and graphic presentation (line – life satisfaction). Analytic approach is necessary for the scale calculated from component areas, graphic scale requires holistic approach. Because most of the respondents wanted to fill in the form on their own, we especially built on written answers (similarly, e.g. Koukola & Ondřejová, 2006; Rybářová et al., 2006). We consider it as an advantage, because it is very difficult for a researcher not to influence a proband during the dialogue. Westerman et al. (2006) refer on the fact that it can easily happen the researcher (inadvertently) influences the interviewed and a big attention should be paid to this. Further on, they mention that, in different times, the patients indicate different key topics (reconceptualisation) and they can change the rate of importance in the same topics (recalibration), when both kinds of changes signal change of values (Schwartz & Sprangers, 1999, as cited in Westerman et al., 2006; comp. Mareš, 2005). Therefore, O'Boyle et al. (1995) recommend so that the respondents would always form new key areas in prospective studies, what we have kept. Křivohlavý (2002) also states that the areas can change within the course of life.

### **State-Trait Anxiety Inventory = STAI**

To measure anxiety we have used STAI by Spielberger (1980) that we have translated from Slovak into Czech. This widely usable method enables to distinguish anxiety as a status and anxiety as a personality trait (anxiousness). This can be an advantage in usage with a longitudinal follow up. But it can be benefited from in patients even with first questionnaires administration after operation, because some patients can experience a high level of anxiety during hospitalisation, otherwise, they do not have the tendency to react in their lives like this. No less important advantage of this questionnaire compared to other ones is that it is more suitable for patients with thyreopathy. Anxiety is more likely deduced from feelings (feelings of tension, nervousness, fear, worries vs. feelings of calm, safety, satisfaction), than from physical symptoms, these could be more likely display of thyroid disorder that anxiety. State Anxiety Scale and Trait Anxiety Scale are always formed with 20 items that are assessed on the scale from 1 to 4.



### **Beck Depression Inventory = BDI**

Beck's questionnaire BDI for detection of depression belongs among the most frequent self-assessment methods for detection of depressive symptoms. In order to burden the patient as little as possible, we have used shortened version in our study with 13 items that is also considered as valid and reliable enough (Reynold & Gould, 1981). A person evaluates each item on four-point assessment scale from 0 to 3.

### **Visual analogous scale Locus of Control = LOC**

To detect Rotter's (1966, e.g. as cited in Kebza & Šolcová, 2008) LOC we have used visual analogue scale. The researched person was asked a question "To what extent do you suppose your life is in your hands (you can influence it, you control its course)?" As an answer he shall illustrate graphically his position between two extremes "not at all – completely" on a line segment of 100 mm long. LOC can reach the scores from 0 to 100. The more the score is closer to 100 (vs. closer to 0), the more it approaches internal locus of control (vs. external locus of control).

### **Semi-structured interviews**

The interview was always carried out with approximately 80% of the patients, who filled in the questionnaires, in each administration of questionnaires (i.e. at the period of hospitalisation, 3 and 6 months since surgery). At least once a dialogue was carried out with each patient (except for 4), but usually three times. Altogether more than 300 dialogues of average length of approximately 20 minutes were realised. With respect to the research extensivity, the interviews were recorded in a form of detailed notes. First three pilot depth interviews helped to map important topics and based on them a structure of semi-structured interview was created.

Statistical data processing was carried out with the help of statistical programme SPSS 14.0. To assess differences between averages of two groups, T-test was used (comp. Reiterová, 2007, 2009). To observe changes in patients in time, an analysis of variance was used for repeated measurements (general linear model). To detect level of the relation (dependence) tightness between two variables we used a correlation analysis. (Hendl, 2006). We assessed data of qualitative character through content analysis (Hendl, 2009; Silverman, 2005; Miovský, 2006).  $\chi^2$  test of independence was used in SEIQoL method to detect whether frequency distribution in individual areas (life goals or cues) depends on (relates to) belonging to a group (the ill x the healthy). On the other hand, assessment of changes in frequency distribution in individual areas with 3 measurements in patients in time was detected with the help of Cochran's test. With respect to the low number of people, in some areas, it was not possible to carry out statistical test in all areas and to draw attention to all substantively significant differences.

## **6. Hypotheses and explorative questions**

Based on the studies of these issues, we define the hypotheses as follows:

H1: We suppose the patient with thyreopathy will be less resilient (they will be with less sense of coherence and with a tendency to external locus of control) than the control group. It is described in the literature that people with a high level of resilience are



physically healthier and there is a higher probability with them to stay healthy (e.g. Kebza, 2005; Kebza & Šolcová, 2008; Křivohlavý, 1990; Vašina, 1999). Moreover, a difficult life situation can result in lowering the feeling of control over the life (comp. Kebza, 2005; Křivohlavý, 2002).

H2: We suppose the ill with thyreopathy will use rather non-effective coping strategies compared to the control group. The problems of coping strategies with thyreopathies are not examined a lot, the attention was only paid to Graves' disease, and yet it is called for more research into modifying stress factors in this diagnose (e.g. Rosch, 1993). Kung's (1995) and Winsy et al.'s (1991) studies have not proved differences between the healthy and ill. On the other hand, Yoshiuchi et al. (1998b) has found out that the group of healthy women compared to the female patients scored higher in problem-focused coping strategy, the group of healthy men compared to the patients waited till the situation passes. Ma, Luo and Zeng (2002) have realised in ill people non-effective coping strategies, compared to the healthy ones.

H3: We suppose the patients with thyreopathy will show lower quality of life, less life satisfaction than the control group. Deteriorated health status and quality of life, limitations in usual activities, social and emotional troubles occur with not only untreated patients, but as well as with the half of treated patients, and with one third even anxiety and so on. (Razvi et al., 2005; Watt et al., 2006).

H4: We suppose the patients with thyreopathy will experience more negative emotions (depression and anxiety) than the control group. It is known that especially anxiety and depression occur in patients with different diagnoses (e.g. Kukleta, 2001; Vymětal, 2003).

H5: We suppose the patients with thyreopathy will perceive higher social support compared to the healthy ones. With regard to the fact it is dealt with a planned operation mobilisation of patient social network and providing increased social support can be presupposed, and even from the side of medical staff. Otherwise, social support has been researched only in patients with Graves' disease, and this area also considers it as insufficient, e.g. Rosch (1993). Differences between the ill and healthy ones have not been proved (Winsa et al., 1991; Yoshiuchi et al., 1998b). Ma, Luo and Zeng's (2002; comp. Kukleta, 2001) research was an exception, where less support was shown in patients probably due to the reason the disease is developed with insufficient social support in an easier way.

H6: We suppose that increase of resilience occurs in time within a half-year follow up in patients (growth of the sense for coherence and tendency to internal locus of control). The researches show that even if the sense for coherence can show itself as a stable trait, difficult life situations can change man's view of the world (Schnyder, 2000). After experiencing surgery (situation with less control) patients can gradually perceive a growth of the control over their lives (comp. Kebza, 2005; Křivohlavý, 2002).

H7: We suppose that the patients with thyreopathy will begin to choose effective coping strategies in time within a half-year follow up. Even earlier experience plays a specific role in managing and choice of coping strategy (comp. Baumgartner, 2001). The patients could acquire more adaptive strategies of manageability with the help of coping with surgery and they could be stimulated to this by the contacts with doctors, and so on.

H8: We suppose there occur improvement in quality of life and life satisfaction in patients in time within a half-year follow up. Satisfaction and quality of life usually increases with decrease of health problems that we suppose after an operation (comp. Křivohlavý, 2002; Kebza, 2005; Křížová, 2005).

H9: We suppose that decrease of negative emotions (depression and anxiety) occur in patients with thyreopathy within a half-year follow up. There should be less negative emotions with presupposed improvement of the health status due to the surgery (comp. Vymětal, 2003).

H10: We suppose that decrease of perceived social support occur in patients with thyreopathy within a half-year follow up. After initial mobilisation of the social support (including medical staff) due to the surgery, there will be its decrease, when the surroundings begin to consider the patient as “healthy”, “cured”.

With respect to these unexplored issues we have also been interested in answers to the following explorative questions:

Q1: What are the differences in the observed variables among the patients with different thyreopathies? Insufficient defining the sample of patients (i.e. type of thyreopathy) is typical for contemporary studies dealing with patients with thyreopathy (Watt et al., 2006). We regard comparison of such type a very interesting and we have not been informed on any similar researches.

Q2: What is the composition of the key areas (life topics) in the framework of quality of life, what importance and satisfaction with individual areas patients with thyreopathy will mention within the follow up period and how it is going to be in the control group? It is necessary to await that disease, treatment effects the quality of life not only in its total height, but also concerning the composition and importance of individual areas (cues) and their satisfaction with them (Křivohlavý, 2002).

Q3: Which variable does the quality of life relate to? Connection of the quality of life with resilience and social support is described in the literature, on the contrary, stress and negative emotions should deteriorate it. (comp. Kebza, 2005; Křivohlavý, 2002, 2009).

## 7. Results and discussion

### 7.1 Results comparison of patients with thyreopathy to healthy population

1. A statistically significant difference between the patients and the control group has not been proved in average scores of the total sense of coherence. An significant difference of average scores have not been proved in scores between the patients and the control group, neither in comprehensibility, nor in manageability, or in meaningfulness. Significantly higher variance ( $p < 0.05$ ) has been found out in comprehensibility with a healthy control group than in patients.
2. Statistically significant difference has not been proved in average scores of completely perceived social support between the experimental and control groups. Statistically significant difference has not been proved between the two groups in the social support from an important, not closely specified person, neither concerning the social support from friends. It shows that the patients perceive significantly higher ( $p < 0.05$ ) social support from the family that in the control group.

3. Statistically significant difference of averages has not been found out in patients and healthy persons in any of the coping strategies. An exception is a strategy of “planning” where it has been showed on the edge of statistical significance, respectively closely behind it, that it is used more frequently by the healthy respondents than the ill with thyreopathy.
4. On the edge of statistical significance, respectively closely behind it, it is indicated that higher life satisfaction has been mentioned by the member of the control group than the patients. The patients have stated significantly higher quality of life ( $p < 0.05$ ) than the persons not suffering from thyreopathy.
5. The ill have scored significantly higher ( $p < 0.05$ ) in state anxiety and anxiousness than the healthy persons.
6. Statistically significant difference in average scores of depression has not been proved between the patients and the control group.
7. Significantly higher tendency ( $p < 0.01$ ) to internality (internal locus of control) and, therefore, to the feeling they have the life in their hands, have had the healthy people compared to the ill. Higher variance in locus of control on the edge of statistical significance has been found out in the patients compared with controls.

Variables		Patients compared to healthy ones	
SOC	ME - meaningfulness		
	MA - manageability		
	C - comprehensibility		
	sense of coherence		
PSSS	A - significant others		
	B -family	↑	/ $p>0.05$ /
	C - friends		
	perceived social support		
COPE	planning	↓	close t. ed.
QoL	table - quality of life	↑	/ $p>0.05$ /
	line - life satisfaction	↓	close t. ed.
STAI	state anxiety	↑	/ $p>0.05$ /
	trait anxiety	↑	/ $p>0.05$ /
BDI	depression		
LOC	locus of control	↓	/ $p>0.01$ /

Caption: ↑ means that patients in the given variable scored higher than healthy population  
↓ means that patients in the given variable scored lower than healthy population  
„close t. ed.“ is an abbreviation for close to the edge of statistical significance

Table 1. Comparison of patients with thyreopathy to healthy population

Hypotheses H1 to H5 have been proved only partially (see Tab. 1). The patients with thyreopathy, compared to the healthy persons, significantly perceive higher social support from the family, they are more anxious and on the edge of significance they are less satisfied with the life. Even other literature resources state that the disease causes the need for help (e.g. Baštecká, 2003; Haškovcová, 1985). Razvi, McMillan, Weaver (2005) and Watt et al. (2006) summarize similar findings of some aspects sides concerning the quality of life. The healthy persons score significantly higher in locus of control and in coping strategy of “planning” on the edge of significance that is often regarded as an effective strategy. Differences between the patients and the healthy persons have not been found out in sense of coherence and depression. A paradox finding, that total higher quality of life is in patients compared to the healthy ones, has been explained in compliance with the quantitative data from the interviews. The patients have made an impression that they rather overestimated (idealised) the satisfaction evaluation in individual areas, especially within the period of hospitalisation, but also a little bit 3 months after it. As if due to the fact they have occurred in a difficult situation and they are to cope with it, they needed to see their life more positively and not to admit dissatisfaction with individual areas of life. Results graphically illustrated on the line segment of satisfaction level have been much more credible. Because the scale of life satisfaction requires holistic approach, but analytic assessment is necessary for the scale of total quality of life calculated from individual parts (comp. Rybářová et al., 2006), it is possible that real emotional status has been reflected on the line segment of satisfaction display, whereas the total calculated quality of life reflected their wish rather than the reality. On the other hand, for example Edelmann (1997, as cited in Baštecká et al., 2003), Moons et al. (2004) have stated that the quality of life does not have to unfold from the presence of a disease, so from the health status.




## **7.2 Follow up results of patients with thyreopathy since surgery during the period of six months**

1. Statistically significant difference in average scores of the whole sense of coherence within the follow up period has not been proved. Statistically significant difference in average scores of manageability have not been proved, nor in the average scores of meaningfulness within the follow up period. The difference between the averages have been indicated on the edge of statistical significance and a significant linear growth ( $p < 0.05$ ) of comprehensibility has been proved in the patients with thyroid disease during the follow up.
2. We have found out a statistically significant difference ( $p < 0.05$ ) in average scores of total perceived social support within the follow up period and a significant quadratic trend has been proved ( $p < 0.05$ ) – at first, more significant decrease of totally perceived social support occurs in the patients after 3 months and to its slight increase after 6 months. Statistically significant difference in averages of perceived social support from an important, not specified person has not been proved in patients within the follow up period. We have realised a statistically significant difference ( $p < 0.05$ ) in average scores and a significant linear decrease ( $p < 0.05$ ) of perceived social support from the family members in the patients within the follow up period. Also a statistically significant difference ( $p < 0.05$ ) in averages of perceived social support from friends in patients within the follow up period a significant

- quadratic trend ( $p < 0.05$ ) has been found out – during the follow up period after the surgery, at first, the decrease of perceived social support from friends occurred after 3 months and, after 6 months, it increased.
3. A difference in averages, close to the edge of significance, appeared in patients during the follow up after the surgery, and on the edge of significance there was indicated a linear decrease in “use of emotional social support”. Statistically significant difference ( $p < 0.01$ ) has been found out in averages with scale of “focus on and venting of emotion” and it was dealt with a quadratic trend ( $p < 0.05$ ) – within the follow up period after surgery, at first, decrease of average score in coping strategy of “focus on and venting of emotions” in patients after 3 months and, after 6 months, it increased. We have not found out any statistically significant differences in averages in other coping strategies within the follow up period.
  4. Statistically significant difference in averages of the life satisfaction level in the patients has not been found out during the follow up. On the edge of statistical significance, respectively close to it there has been indicated a significant difference in averages and a significant linear decrease of quality of life ( $p < 0.05$ ) has been proved in patients within the follow up period.
  5. We have proved statistically significant difference ( $p < 0.05$ ) in average scores and statistically significant linear decrease ( $p < 0.05$ ) of state anxiety within the follow up period. Also a statistically significant difference ( $p < 0.01$ ) in averages have been realised and a significant linear decrease ( $p < 0.01$ ) of anxiousness during the follow up.
  6. We have not proved a statistically significant difference of depression averages in patients during the follow up.
  7. A difference in average scores on the edge of statistical significance has been indicated and a statistically significant linear trend ( $p < 0.05$ ) to higher internality (internal locus of control) has been proved within the follow up period.

Hypothesis H10 has been confirmed, hypotheses H6 and H9 have been proved partially, hypotheses H7 and H8 have not been proved (see Tab. 2). During the half-year follow up period there occurred significant decrease of anxiety in patients, an increase in comprehensibility and in the feeling of the control over the situation has been indicated on the edge of significance (comp. Kebza, 2005; Kebza & Šolcová, 2008). Our finding is in compliance with the fact that in managing a difficult situation a man at first tries to understand it (comprehensibility) (comp. Mareš, 2007, 2008, 2009; Mareš et al., 2007). A linear decrease in coping strategy of “use of emotional social support” was indicated in patients within the follow up, and a significant decrease was indicated in perceived social support from the family, apparently due to the fact the stress situation of operation passed. Total social support, support from friends and coping strategy of “focus on and venting of emotions” changed in a quadratic way – at first, there was a significant decrease after 3 months, and a slight increase after 6 months after hospitalisation. Apparently it relates to the fact, the patient can feel himself isolated during the first 3 months after the surgery. Close to the edge of statistical significance a decrease in total quality of life was indicated in patients within the follow up, that relates to original overvaluation of life satisfaction with individual areas, but at the same time it can relate to the fact what was apparent in first interviews with them– inappropriate expectations in relation to the medical intervention (they expected complete cure). It is similarly reflected by Vavrda (2005), comp. Calman (1984, as cited in Krivohlavý, 2002).



Variables		Follow up of patients during 6 months (trend)	
SOC	ME - meaningfulness		
	MA - manageability		
	C - comprehensibility	linear ↑	ed.
	sense of coherence		
PSSS	A - significant others		
	B -family	linear ↓	/p>0.05/
	C - friends	quadratic 	/p>0.05/
	perceived social support	quadratic 	/p>0.05/
COPE	use of emotional social support	linear ↓	close t. ed.
	focus on & venting of emotions	quadratic 	/p>0.01/
QoL	table - quality of life	linear ↓	close t. ed.
	line - life satisfaction		
STAI	state anxiety	linear ↓	/p>0.05/
	trait anxiety	linear ↓	/p>0.01/
BDI	depression		
LOC	locus of control	linear ↑	ed.

Caption: ↑ means that the given variable was dealt with a linear increase  
↓ means that the given variable was dealt with a linear decrease  
depicted curve illustrates course of a quadratic trend  
„ed.“ is an abbreviation for edge of statistical significance  
„close t. ed. “ is an abbreviation for close to the edge of statistical significance

Table 2. Follow up of patients with thyreopathy since surgery during the period of six months

7.3 Comparison of results in patients with different types of thyreopathies

1. There were not found out statistically significant differences of averages among the patients with different types of thyreopathies, nor in the total sense of coherence, or in manageability or meaningfulness within any of the 3 measurements. Comparing the average scores of comprehensibility there were not found any significant differences during 1<sup>st</sup> measurement, bur with 2<sup>nd</sup> and 3<sup>rd</sup> measurements, there were indicated lower average scores of comprehensibility on the edge of statistical significance in patients with carcinoma compared to other types of thyreopathies.
2. Statistically significant differences of averages were not proved in patients with different types of thyreopathies, neither in total perceived social support, nor in the social support from significant others, in social support from family members and from friends. Concerning the variances there was not found any statistically significant difference in the sphere of social support from friends within 1<sup>st</sup> measurement, but they

- showed higher variance in social support from friends in 2<sup>nd</sup> measurement ( $p < 0.05$ ) and, the patients with carcinoma especially in 3<sup>rd</sup> measurement, compared to other ills.
3. We did not prove any statistically significant differences of average scores in different coping strategies, except for 2, in 1<sup>st</sup> measurement among the patients with different types of thyreopathies. The results on the edge of statistical significance indicate that the patients with carcinoma probably coped stress more often through “positive reinterpretation and growth” within 1<sup>st</sup> measurement, and, conversely, they used less coping strategy of “humour”, compared to the patients with other types of thyreopathies.
  4. During 2<sup>nd</sup> measurement, the patients with thyroid carcinoma use coping strategy of “humour” significantly less frequently ( $p < 0.05$ ) and more frequent “use of instrumental social support” was indicated on the edge of significance than in patients with nodular goitre. The patients with hyperthyroidism used significantly more often ( $p < 0.05$ ) “planning” strategy during 2<sup>nd</sup> measurement and more frequent coping through “suppression of competing activities”, through “restraint coping” and through “focusing on and venting of emotions” was indicated on the edge of statistical significance, compared to other patients. During 2<sup>nd</sup> measurement there were not proved any statistically significant differences of averages in other coping strategies among the patients with different types of thyreopathies.
  5. We did not find statistically significant differences of averages in any of the coping strategies in patients with different types of thyreopathies within 3<sup>rd</sup> measurement.
  6. Higher variance in coping strategy of “religious coping” was indicated in patients with carcinoma, compared to other patients, on the edge of significance, within 2<sup>nd</sup> measurement, and especially within 3<sup>rd</sup> measurement ( $p < 0.05$ ).
  7. Results on the edge of statistical significance ( $p = 0.05$ ) within 1<sup>st</sup> measurement indicate higher life satisfaction in patients with nodular goitre compared to other patients. During 2<sup>nd</sup> and 3<sup>rd</sup> measurements, any statistically significant differences in averages of satisfaction were not found out. Statistically significant difference in averages with quality of live among the patients with different types of thyreopathies was not proved in any of the measurements.
  8. Statistically significant difference in averages of anxiousness among the patients with different types of thyreopathies was not proved in any of the measurements. Higher average scores of state anxiety in patients with carcinoma were indicated on the edge of significance during 2<sup>nd</sup> and 3<sup>rd</sup> measurements compared to other ills. During 2<sup>nd</sup> measurement there was indicated difference in variances on the edge of significance, where the highest variance was in the results of patients with carcinoma.
  9. Statistically significant difference in depression among patients with different types of thyreopathies was not proved within any measurement.
  10. Comparing the average scores of locus of control there were not found any statistically significant differences in 1<sup>st</sup> and 3<sup>rd</sup> measurements. A higher tendency to externality (external locus of control) and the feeling they cannot influence their lives were indicated in patients with carcinoma on the edge of statistical significance during 2<sup>nd</sup> measuring compared to other patients.

Comparison of patients with different types of thyreopathies brought interesting results (see Tab. 3.). The patients with nodular goitre were significantly more satisfied with life at the time of surgery than other patients. The most significant difference from other types of

Variables		Carcinomas		
		Sugery	3 months	6 months
SOC	C - comprehensibility		↓ ed.	↓ ed.
PSSS	C - friends		↑s² /p>0.05/	↑s² /p>0.01/
COPE	suppression of competing activities		↓ ed.	
	use of instrumental social support		↑ ed.	
	positive reinterpretation & growth	↑ ed.		
	focus on & venting of emotions		↓ ed.	
	religious coping		↑s² ed.	↑s² /p>0.05/
	humor	↓ ed.	↓ /p>0.05/	
STAI	state anxiety		↑ ed.	↑ ed.
LOC	locus of control		↓ ed.	
Variables		Nodular goitres at the time of surgery		
QoL	line - life satisfaction	↑ ed.		
Variables		Hyperthyroidism after 3 months since surgery		
COPE	planning	↑ /p>0.05/		
	suppression of competing activities	↑ ed.		
	restraint coping	↑ ed.		
	focus on & venting of emotions	↑ ed.		

Caption: ↑ means that patients with this diagnose scored higher in the given variable that other patients  
↓ means that patients with this diagnose scored lower in the given variable that other patients  
„ ed.“ is an abbreviation for edge of statistical significance

Table 3. Comparison of results in patients with different types of thyreopathies


thyreopathies is in patients with thyroid carcinoma. Only a small amount of these was in our researched file, but we will try to indicate statistically significant and marginally significant differences and trends. The biggest differences appear after 3 months since surgery when patients with carcinoma score lower in coping strategies as “humour”, “suppression of competing activities” and “focus on and venting emotions”, as well as in locus of control. In the period after 3 and 6 months since surgery the patients with carcinoma are more anxious compared to the others and score lower in comprehensibility. Bigger interindividual differences can be captured in carcinomas compared to the others after 3 and 6 months since surgery in coping strategy in “religious coping” and in social

support from friends. Support from friends is probably related to what the patients referred to during the interviews; some of them hid till the end of observation from their family and friends that thyroid cancer had been found out with them. Tschuschke (2004) also refers on similar findings, for example a tendency to apply mechanisms of suppression and increased level of anxiety in patients with carcinoma.

#### **7.4 Follow up results of patients with different types of thyreopathies since surgery during the period of six months in selected variables**

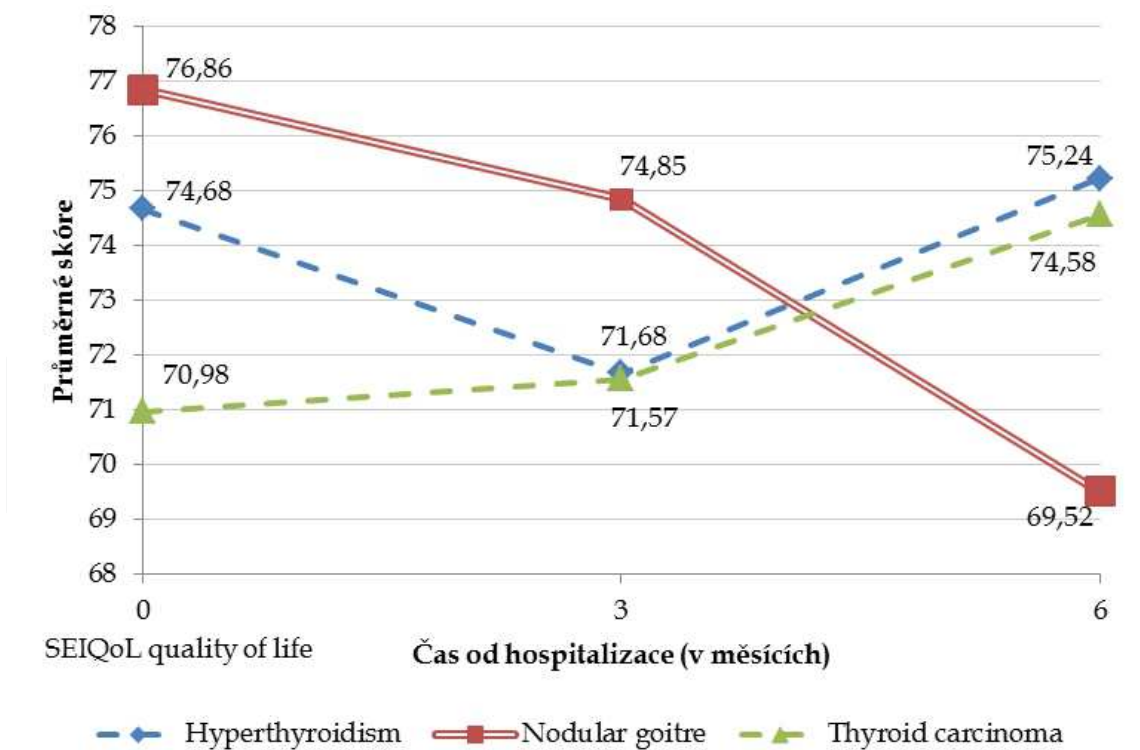
1. Statistically significant difference in average scores of life satisfaction was not proved, neither in total quality of life within the observed period, nor in patients with hyperthyroidism, or in patients with carcinoma. We found out a statistically significant difference in average scores in patients with nodular goitre and a significant linear decrease of life satisfaction was proved (always for  $p < 0.05$ ) and in total quality of life (always to  $p < 0.01$ ). Patients with nodular goitre, who underwent total thyroidectomy, had lower level of life satisfaction in 3<sup>rd</sup> measuring on the edge of significance compared to those who underwent hemithyroidectomy. We attribute this finding to the fact that nodular goitre recently undergoing total intervention experienced more changes in life than those with hemithyroidectomy.
2. Statistically significant difference in averages of locus of control was not proved during the follow up period in patients with nodular goitre. The patients with nodular goitre, who had already undergone hemithyroidectomy, had higher tendency to internality (internal locus of control) with 3<sup>rd</sup> measurement on the edge of significance compared to those who had undergone total thyroidectomy. We attribute this finding to the fact that nodular goitre recently undergoing total intervention experienced more changes in life than those with hemithyroidectomy. Differences on the edge of significance in average scores of locus of control were indicated in patients with hyperthyroidism and carcinoma within the observed period. During operation follow up, the linear trend to higher internality (internal locus of control) was indicated on the edge of significance in patients with hyperthyroidism. During operation follow up, the quadratic trend was indicated on the edge of significance in patients with carcinoma – at first, after 3 months, there was a tendency to higher externality (external locus of control) and after 6 month, conversely, to higher internality (internal locus of control) than the original level was.

The results indicate (see Tab. 4, Fig. 1-3), that it is probable, the observed changes in time in life satisfaction rate, in total quality of life and in locus of control are effected by type of thyreopathy. Concerning nodular goitres, there occur a significant reduction in the level of life satisfaction and total quality of life during the half-year follow up; in other types of thyreopathies, significant changes of these variables do not occur in any direction. This corresponds with our finding resulting from interviews that people who had some difficulties before intervention adapt better and express higher satisfaction with their status than people who did not have any problems (most often nodular goitres). In patients with hyperthyroidism there occurs increase of internality on the edge of significance during follow up, but in the patients with carcinoma, at first a significant decrease occurs after 3 months and, after 6 months, there occurs increase to higher level that it was at the time of hospitalisation. Last-mentioned disease can be considered as the most serious from the viewpoint of control loss over the situation development (comp. Kebza, 2005; Kebza & Šolcová, 2008).

Variables		Nodular goitre follow up during 6 months (trend)	
QoL	table - quality of life	linear ↓	/p>0.01/
	line - life satisfaction	linear ↓	/p>0.05/
Variables		Carcinomas follow up during 6 months (trend)	
LOC	locus of control	quadratic 	ed.
Variables		Hyperthyroidism follow up during 6 months (trend)	
LOC	locus of control	linear ↑	ed.

Caption: ↑ means that the given variable was dealt with a linear increase  
↓ means that the given variable was dealt with a linear decrease  
depicted curve illustrates course of a quadratic trend  
„ed.“ is an abbreviation for edge of statistical significance

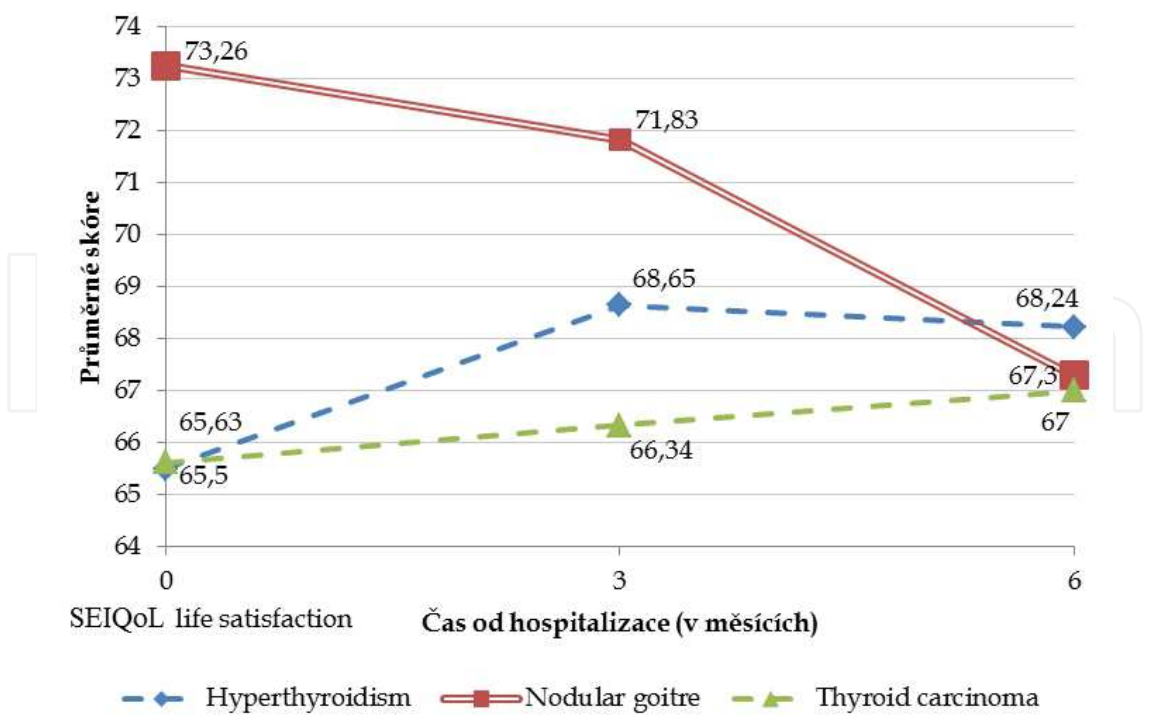
Table 4. Follow up results of patients with different types of thyreopathies since sugery during the period of six months in selected variables



Caption: \_\_\_\_\_ (double line) statistically significant trend in time  
----- (dashed line) statistically insignificant trend in time

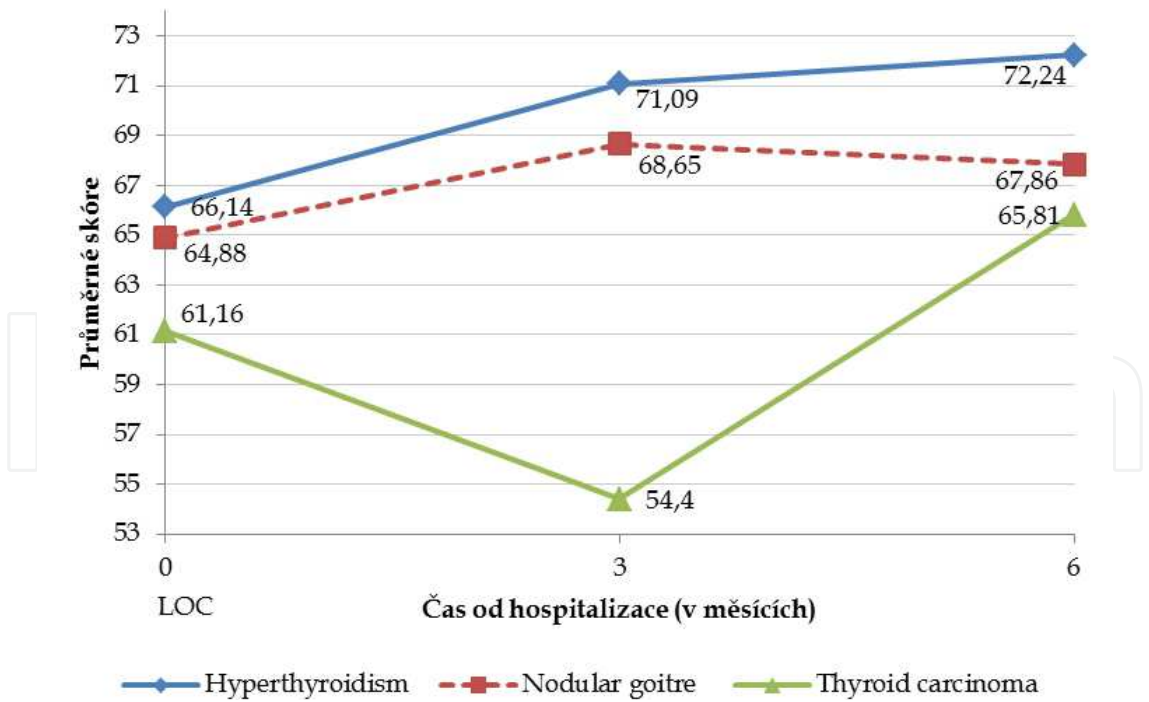
Fig. 1. Monitoring of average scores of total quality of life in SEIQoL (table) during the six-month period in patients with different types of thyreopathies





Caption: \_\_\_\_\_ (double line) statistically significant trend in time  
----- (dashed line) statistically insignificant trend in time

Fig. 2. Monitoring of average scores of life satisfaction in SEIQoL (line) during the six-month period in patients with different types of thyreopathies



Caption: \_\_\_\_\_ (single line) trend in time on the edge of statistical significance  
----- (dashed line) statistically insignificant trend in time

Fig. 3. Monitoring of average scores of LOC (locus of control) during the six-month period in patients with different types of thyreopathies

### 7.5 Results for quality life assessment measured by SEIQoL method acquired from individual areas (life goals or cues)

1. Respondents' answers regarding quality of life were divided into 11 categories (excluding a collective category: other): family, health, work, interpersonal relationships, leisure, material security, mental well-being, spiritual dimension, education, living conditions and good old age. All above mentioned categories appeared in the group of patients and in the control group. Patients with thyroid gland, when compared to healthy people, mentioned life and social security within more categories (work, mental well-being, living conditions). In category family, they reported close people, mainly those that are somehow depended on them (children, old parents). Patients, more than the controls, had more answers connected with health of close people. During follow up, patients didn't change their understanding of content of individual categories.
2. Respondents of all groups most often mentioned cues: 1. family, 2. health and 3. work. Patients frequently reported life goals as good old age, or mental well-being, while the control group reported more leisure and education. During the follow up of patients with thyreopathy changes occurred in the distribution of frequencies (significant and the significance edge) for more than half the categories.
3. The most important cues for all respondent groups were 1. family, 2. health, 3. spiritual dimension, rarely good old age, which otherwise closely followed the spiritual dimension. It seems that during follow up of patients there was, on the edge of significance, a sign of decline for family and increase for health. Apparently there is also a change in the spiritual dimension category; its importance (with probands who recorded it) is highly evaluated within 3 months after surgery.
4. We have a reason to believe that the patients rather overevaluated (idealized) a situation while evaluating satisfaction for individual categories, sometimes slightly also after 3 months; therefore we cannot objectively assess the shift over time or differences between patients and control group. All observed groups assessed life conditions and material security as the least satisfactory, patients at the time of surgery recorded little satisfaction with mental well-being and after 3 to 6 month showed little satisfaction with category work.

The answers of respondents in the quality of life were categorized into 11 (or 12) areas that occurred both in patients and controls. Patients put more emphasis on life securities and care for close people dependent on them. In connection with their own illness they were apparently aware of what would happen to their children or parents dependent on them if something happened to them. Respondents of all groups mentioned as the most frequent and the most important goals family and health. Findings of Buchtová (2004) and Rybářová et al. (2006) correspond. Spiritual dimension category was little recorded but the people that recorded it saw its importance right after family and health (comp. Rybářová et al., 2006). Patients frequently reported categories of good old age and mental well-being because these areas can be threaten by the disease. Also, at the time of surgery, they were least satisfied with mental well-being. Their dissatisfaction with the work within 3 and 6 months after surgery is probably due to return to work, which can be difficult. The spiritual dimension is gaining importance within 3 months after surgery which is likely due to demands for coping with surgery. Experiencing difficult situations

can lead to awareness of the importance of faith (comp. Hodačová, 2007). In our findings there were changes in patients' reconceptualisation (change of key topics), and recalibration (change of importance) (e.g. Schwartz & Sprangers, 1999, as cited in Westerman et al., 2006; comp. Mareš, 2005). During interviews we noted that one of our patients with carcinoma, 6 months after surgery, had so called posttraumatic growth. Higher levels of satisfaction of patients are explained by their overvaluation (idealization) of a life situation (see also chap. 7.1 and 7.9).

### **7.5.1 Content analysis of categories (life goals or cues) reported by respondents in the SEIQoL method**

#### **Category family**

It included mentions of family members – mostly mentioned children, mainly by patients, desire for having children, then a partner, siblings, and only patients recorded in their answers parents. Patients seem to be more aware of what would happen to their children or parents dependent on them if something happened to them. Healthy and ill people associated this category with concepts such as family relationships and satisfaction, happiness in family. They perceived the family as a place that should provide support and help with governance of love, peace, cohesiveness, harmony and understanding. They recorded also a topic of raising children.

#### **Category health**

It contained mainly answers specifying the person or persons who should be healthy – the most frequent goal was to be healthy and health of close people, a lot of responses concerned the health of loved ones (most frequently with patients), only little less his/her own health. Healthy people rather than patients stated a healthy lifestyle. Sometimes formulation in terms of: health is the most important value, appeared.

#### **Category mental well-being**

Answers related to feelings of satisfaction, peace and happiness. Patients are featured responses expressing a desire for life securities.

#### **Category work**

It included themes of work, employment, profession – his/her own work was most mentioned, and then the same number of responses focused on career and caring for family members to have a job and succeed in it. A number of formulations expressed a goal to have a job. The patients had a topic of having secured job.

Patients and healthy persons expected peace, satisfaction and financial security at work they also show the importance of interpersonal relationships in the workplace, the work to be interesting, allowing self-realization.

#### **Category living conditions**

It contained topics related to awareness of society, nature - respondents mostly wished for world peace, the same number of responses went to topics about environment and events in society, politics. Patients recorded answers about social security.

### **Category interpersonal relationships**

It contained mainly friendly relations and relationships with people in general – in connection with this, the respondents mentioned love, understanding and harmony between people. Some of them were also aware of their own share in relationships and reported character behaviour to others (willingness to help, be polite, etc.). Several responses were related to relations with neighbours.

### **Category education**

The answers were mainly related to respondents' own education and training, but also to education of their children.

### **Category good old age**

It included the pursuit of contented old age, some people mentioned self-sufficiency. This category was recorded by both groups of respondents in their elderly age.

### **Category leisure**

It contained a variety of leisure activities, rest was mentioned only exceptionally. As for activities, respondents most frequently reported sport, followed by gardening, culture, travel, household chores, but also reading, nature (including walks in the countryside) and others.

### **Category material security**

In both groups it related to material and financial security, provisions. About 2/3 of answers were formed by subcategory finance, 1/3 was associated with housing.

### **Category spiritual dimension**

It included topics related to faith or spiritual life. There were not only traditional religious answers (God, prayer, etc.), but also answers expressing some sort of overlap (spiritual growth, to understand the meaning of life, respect for life, look for better side of matters, etc.)

## **7.6 Determination of proximity of relations (correlation) between the monitored variables particularly in regards to results of SEIQoL method**

1. Patients more satisfied with life, healthy people more satisfied with life and healthy people reporting about higher quality of life were more resilient (rather with internal locus of control, with a higher sense of coherence), perceived higher social support and were less anxious and depressed. Results of all questionnaires and scales in patients were more dependent of level of life satisfaction than total quality of life consisting of different areas.
2. The results of all methods used for patients do not depend on the length of diagnosis, nor the age or marital status as in the control group, they usually only moderately correlate with recent in/experienced life changes. Educated patients and educated healthy people have a higher sense of coherence and are less anxious.

Our findings regarding the relationship of other variables to measure satisfaction and overall quality of life correspond with the findings reported in several studies (e.g. Matuz, 2006) as well as in literature about health psychology (e.g. Kebza, 2005; Krivohlavý, 2009).

### 7.7 Factor analysis of a questionnaire for coping strategies COPE

1. We identified four types of general coping strategies based on preference or rejection of some partial methods of coping, as measured using the COPE method. They were strategies that we called strategy of active, constructive coping, a passive strategy, a emotion-focused strategy and strategy for obtaining a distance.

In many respects, our results correspond with Vašina's (2002) findings.

### 7.8 Comparison of results of people depending on their economic activity

For completeness, we mapped the psychosocial factors of patients with thyroid gland, depending on their economic activity. Patients with thyroid gland didn't show any statistically significant differences in any of the examined characteristics between economically active people and pensioners. In this case an intervening variable is obviously important- most likely it is the thyroid gland disease.

Whereas in old-age pensioners not suffering from thyroid disease we found significantly higher levels of anxiousness ( $p < 0,01$ ) compared with healthy economically active people. Compared to old-age pensioners not suffering from thyroid disease, healthy economically active people scored significantly in sense of coherence ( $p < 0,05$ ) and had more internal locus of control ( $p = 0,055$ ). Higher levels of anxiousness in old-age pensioners is probably related to their age and situation, as well as feeling that their life is determined by external circumstances, which they cannot affect. Křivohlavý (2009) indicates higher anxiety associated with a lower level of sense of coherence.

### 7.9 Results from semi-structured interviews

1. Many patients did not felt subjectively well, long before the correct diagnosis was established. Thyroid disease in the early days was often mistaken for mental illness – by both healthcare professionals and patients who then feared to search the doctors.
2. Patients in the time before surgery reported diverse and varying physical and mental symptoms – especially tiredness, anxiety, irritability, sadness.
3. The patients considered a psychological stress as the most common reason for a disease breakout (roughly half of patients). All expected a full recovery after the surgery, which is not possible.
4. At the time of surgery, patients felt social support from their families, but not at work. They rather feared situations at work, and thought they might lose their jobs.
5. The patients gave the impression of overestimating (idealizing) the situation when evaluating satisfaction for each category, especially at the time of surgery, and a little after 3 months.
6. Patients would need more information about the recovery, especially in the first 3 months, (primarily about the state of scars) and further prognosis for thyreopathy.
7. Satisfaction or dissatisfaction, which they expressed with their health status, related to whether and to what extent they experienced difficulties resulting from illness prior to surgery, and whether and with what effect they have been previously treated. The patients, who experienced difficulties resulting from their disease and hadn't been cured, were more satisfied with their health status after the surgery.



8. If patients had no difficulties after the surgery, they believed that they will feel as good in future. If they had difficulties, they hoped to feel better.
9. Patients with cancer experienced disease differently than others. There were significant interindividual differences in coping with illness. 3 months after surgery, when they often responded with denial, were more dissatisfied with their condition than other patients. It was difficult for them to tell their close ones diagnosis. Compared to other patients, the topic of disease was topical even after 6 month after the surgery. In this time, one patient with cancer showed so called posttraumatic growth.
10. During follow up, patients reported more positive than negative consequences of surgery. As the most positive they considered improvement of health, further re-evaluation of values, which could indicate the direction to posttraumatic growth (comp. Costa & Pakenham, 2011). As the most negative consequences of the surgery they reported a scar and use of medication.

Overall, we observed three types of attitudes to an interview. The first type of patients was willing to share their illness and their life experiences. The second type of patients was particularly willing to share their experience with thyroid disease, physical condition, the diagnosis and treatment, in other areas they were less willing to share (seems consistent with the classical biomedical model). The third type consisted of patients who were generally more reserved, and answered any type of questions briefly.

## 8. Conclusion

Comparisons of people with thyroid gland disease and healthy people, and longitudinal follow up of patients were carried out. In some psychosocial aspects the patients with thyreopathy differ from the general population, which does not suffer from this disease, independently of the thyreopathy type. Statistically, the patients were significantly more anxious and perceived higher social support from family when compared with the control group. The control group scored significantly higher in locus of control and on the edge of significance they felt more satisfied with life than the patients. During the six-month follow up after the surgery, some indicators of quality of life were improved. We found a statistically significant decrease in anxiety and social support. Comprehensibility and the feeling of having my life firmly in my hands increased on the edge of significance. One patient with cancer we even saw so called posttraumatic growth. Results of total quality of life calculated from individual categories cannot be evaluated fully psychometrically, since the situation was most likely overvalued (idealized) by patients mainly during hospitalization and a bit after 3 month after the surgery. Results recorded in graphics on segment line of life satisfaction were more plausible. Life satisfaction and quality of life significantly positively correlated with sense of coherence, with the locus of control and perceived social support, and significantly negatively correlated with anxiety and depression.

Division of patients by type of thyreopathy to nodular goitre (including thyroiditis), hyperthyroidism, and cancer was critical for the research. Patients with eufunctional nodular goitre in some respects also differ from healthy population. These have been studied very rarely; they are even assigned to the control group as healthy people during research on other types of thyreopathies. Patients who benefited from surgery the most were those who had some difficulties before the surgery (usually with hyperthyroidism) they better adapted to the surgery and expressed satisfaction with their condition.

Dissatisfaction or worse quality of life was recorded by patients who had an impression of being without difficulties before the surgery, and suddenly they experience some and must use hormone replacement (usually nodular goitre, rarely carcinomas). The biggest relief is experienced by patients, who had some symptoms and were not treated by other means than surgical, as manifestations of their disease didn't last long. Patients with thyroid carcinoma differ from other types of thyreopathies the most.

Patients in our country do not have comparable information in terms of quantity and quality when compared to patients in traditionally democratic countries, and they do not have background of patient organizations.

We are aware of the limitations of our work. In particular, it would be necessary to increase the number of surveyed people. It would be necessary to include a larger number of men into the set of surveyed people (but there is low incidence of this disease with men). Members of the control group in our survey honestly declared that they are not, and were not, treated or monitored for thyroid disease. When choosing members of the control group, it would be most suitable to have each member screened for thyreopathy, which would be, on the other hand, costly. When comparing patients with healthy population it would be better to set a paired control group and adjust it according to status and demographic features. In regards to the specificity of the sample, results cannot be generalized or only with some reservations. On the other hand, it is a six-month follow up of almost the entire population of patients who underwent thyroid surgery in one of the hospitals in the Czech Republic, which is very valuable for better exploration of this issue. It would be useful to verify our results in another, similar department or collect data from more departments focusing on thyroid surgeries, in the same time. In future, it would be good to keep only the most informative methods in a battery of tests, in order not to bother the patients unnecessarily. It should be strictly monitored whether patients fill out a questionnaire at the time of hospitalization under the same conditions. As for the longitudinal follow up, it would be necessary to make more than 3 measurements in time to be able to better predict events. It would also be valuable if follow up could last longer than 6 months. Research of patients treated by means other than surgical could be very useful. We believe that it would be very desirable to continue in the research of these issues, because the current findings give us more questions and directions of interest than „finished " and clear answers.

We are not aware of any similar research in the Czech Republic on this topic. The performed research is in such a stage and complexity unique even for the English literature. We believe that this issue deserves a greater attention of researchers and psychotherapists because many of the untreated and treated patients may suffer from a variety of symptoms, experience worse health status and quality of life. It would be useful to concentrate on preoperative preparation of a patient and work with his expectations while doing it.

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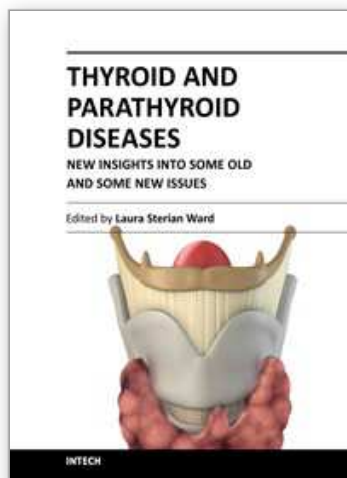


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## **Thyroid and Parathyroid Diseases - New Insights into Some Old and Some New Issues**

Edited by Dr. Laura Ward

ISBN 978-953-51-0221-2

Hard cover, 318 pages

**Publisher** InTech

**Published online** 07, March, 2012

**Published in print edition** March, 2012

This book was designed to meet the requirements of all who wish to acquire profound knowledge of basic, clinical, psychiatric and laboratory concepts as well as surgical techniques regarding thyroid and parathyroid glands. It was divided into three main sections: 1. Evaluating the Thyroid Gland and its Diseases includes basic and clinical information on the most novel and quivering issues in the area. 2. Psychiatric Disturbances Associated to Thyroid Diseases addresses common psychiatric disturbances commonly encountered in the clinical practice. 3. Treatment of Thyroid and Parathyroid Diseases discusses the management of thyroid and parathyroid diseases including new technologies.

### **How to reference**

In order to correctly reference this scholarly work, feel free to copy and paste the following:

Petra Mandincová (2012). Psychosocial Factors in Patients with Thyroid Disease, Thyroid and Parathyroid Diseases - New Insights into Some Old and Some New Issues, Dr. Laura Ward (Ed.), ISBN: 978-953-51-0221-2, InTech, Available from: <http://www.intechopen.com/books/thyroid-and-parathyroid-diseases-new-insights-into-some-old-and-some-new-issues/psychosocial-factors-in-patients-with-thyroid-disease>

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